

quake occurred to-day on the island of Ischia, in the Mediterranean sea. The inhabitants were greatly agitated as they feared an explosion from the long extinct volcano, Mount San Nicolo.

CAIRO, EGYPT, July 25, 1884.—It is reported that an earthquake has occurred at Massowah, on the Red sea. Nearly all the houses in the city were destroyed, and the ships in the harbor were violently rocked. The inhabitants were panic stricken and fled to the interior.

POLAR BANDS.

Lead Hill, Arkansas, 14th, 31st.
Los Angeles, California, 27th.
Archer, Florida, 2d, 3d, 6th, 12th, 13th, 17th, 20th, 23d, 24th, 27th, 28th.
Laconia, Indiana, 29th.
Wabash, Indiana, 7th, 16th.
Salina, Kansas, 24th.
Maud, Kansas, 21st.
Gardiner, Maine, 7th.
Escanaba, Michigan, 30th.
Mountainville, New York, 12th, 15th.
Wauseon, Ohio, 1st, 2d, 28th.
Leetsdale, Pennsylvania, 10th.
Wytheville, Virginia, 6th, 12th, 15th, 22d.
Variety Mills, Virginia, 3d, 14th.

PRAIRIE AND FOREST FIRES.

Kingston, Ontario: extensive fires were burning in several of the adjacent townships on the 2d. The largest of these fires covered an area three miles wide and about twenty miles long. One million feet of lumber were burned. The country was so dry that the fires spread with great rapidity.

Forest fires also occurred in the vicinity of Carson City, Nevada, on the 6th, and in the vicinity of Fort Buford, Dakota, on the 27th.

ZODIACAL LIGHT.

Archer, Florida, 18th, 22d, 23d.
Cantonment, Indian Territory, 10th.
Indianapolis, Indiana, 22d.
Fall River, Massachusetts, 15th.
Escanaba, Michigan, 16th.
Nashville, Tennessee, 20th to 24th.

SAND STORMS.

Fort McDowell, Arizona, 7th, 8th.
Yuma, Arizona, 15th.
West Las Animas, Colorado, 1st.
Boisé City, Idaho, 28th.

MIGRATION OF BIRDS.

Geese flying northward.—Cape Henry, Virginia, 19th.
Ducks flying southward.—Portland, Oregon, 23d.

NOTES AND EXTRACTS.

REPORT OF THE ALABAMA WEATHER SERVICE, UNDER DIRECTION OF PROFESSOR P. H. MELL, JR.

MECHANICAL AND AGRICULTURAL COLLEGE,
AUBURN, ALABAMA, August 1, 1884.

Although there have been oppressive and sultry days the month of July has sustained quite a uniform temperature, and the nights have generally been cool and comfortable. The heat in some sections, however, has been keenly felt, because the atmosphere was so saturated with moisture as to prevent rapid evaporation from the body. The thermometer ranged as high as 100° at only four stations.

The state has been visited by copious showers and in some sections the rains have been unusually heavy. The farming interests, however, have suffered but little, and the prospects for a fine crop are very flattering.

State summary.

Mean temperature, 80°·5; highest temperature, 104° at Troy, on the 25th; lowest temperature, 54° at Selma, on the 8th; range of temperature for the state, 50°; greatest monthly ranges at stations, 35° at Troy and 41° at Calera; least monthly range of temperature, 14° at Lafayette and 25° at Auburn; greatest daily ranges at stations, 38° at Calera, 35° at Selma on the 8th, and 27° at Gadsden on the 21st; least daily ranges, 0° at Union Springs on the 10th, 0° at Florence on the 15th, 0° at Carrollton on the 28th, and 9° at Mobile on the 23d.

Mean depth of rainfall, 5.47 inches; mean daily rainfall, 0.186 inch; largest monthly rainfall, 12.02 at Green Springs; least monthly rainfall, 0.41 at Fort Deposit; greatest daily average for the state, 1.10 inches, on the

28th; largest daily rainfall at stations, 3.50 inches at Carrollton, 3.10 at Scottsborough, and 3.50 inches at Wetumpka, all on the 28th.

Days of general rainfall, 14th, 15th, 25th to 29th; average number of days on which rain fell, 11, average number of cloudy days, 10.3; fair days, 13.5; clear days, 7.2.

Warmest day, 5th; coolest day, 8th.

Prevailing winds, west and northwest; greatest force of wind reported from Marion on the 13th—45 miles per hour from the west; Mobile reports on the 6th, 23 miles per hour from the southeast.

The following meteorological summary is taken from the report of Hon. J. T. Henderson, Commissioner of Agriculture, for the state of Georgia:

Districts.	Temperature.			Precipitation.
	Mean of maximum.	Mean of minimum.	Monthly mean.	
Northern Georgia.....	94.5	58.3	77.2	4.59
Middle Georgia.....	95.7	64.0	80.4	3.34
Southwestern Georgia.....	94.0	72.0	83.0	6.25
Southeastern Georgia.....	91.8	69.5	80.2	2.72
Eastern Georgia.....	95.5	64.5	82.2	3.31
Means for state.....	94.3	65.7	81.2	4.04

The following meteorological summary is from the July report of the "Illinois Weather Service," under direction of Mr. S. D. Fisher:

Districts.	Temperature.			Precipitation.	Average number of rainy days.
	Mean of maximum.	Mean of minimum.	Monthly mean.		
Northern counties.....	89.8	54.1	71.1	5.97	11
Central counties.....	92.1	59.2	73.5	3.62	12
Southern counties.....	95.0	64.3	76.8	3.97	10
Averages for state.....	92.3	59.2	73.8	4.52	11

The following meteorological summary is taken from the July report of the "Indiana Weather Service: "

Districts.	Temperature.			Precipitation.
	Mean of maximum.	Mean of minimum.	Monthly mean.	
Northern counties.....	90.0	56.7	73.6	3.68
Central counties.....	90.2	57.3	74.4	4.99
Southern counties.....	92.1	58.6	74.6	4.74
Averages for state.....	90.8	57.5	73.6	4.57

IOWA WEATHER BULLETIN, FOR JULY, 1884.

July, 1884, was fair, cool and calm, with moderate excess of rainfall.

The mean temperature was two degrees below normal; during the past forty-five years, the July temperature has been as much, or more, below normal in sixteen years. The first and second decades were decidedly cold, being three and four and a half degrees below normal; but the third decade was hot, being one and a half degrees above normal. The 17th was the coldest day, being 11° below normal; the 23d was the hottest day with 10° above normal. The black bulb sun thermometer averaged 48°·4 above the air temperature at noon, and reached 154° on the 23d.

The mean cloudiness was nearly normal, but the number of clear days was high.

The number of thunderstorms was high, and several were quite severe, locally accompanied with high wind or hail. The most extended of these was the squall of the afternoon and evening of the 11th, extending from Palo Alto to Johnson counties, and considerable damage was done in a narrow belt from Hamilton county southeast, by hail. The thunderstorm of the evening of the 23d and early morn of the 24th was most severe from Dallas to Marion counties. The thunderstorm of the evening of the 4th was most severe in middle eastern Iowa. Three very small tornadoes reached the ground over a short distance in Sioux City, Woodbury county; near Denison, Crawford county, and near Hubbard, Hardin county. This brings the latest summer date of tornadoes in Iowa two days further; but the damage done to life and property by these tornadoes was less than what lightning and hail did during the same storm in other parts of Iowa.

For the state at large, the weather has been favorable. No continued rains having occurred, haying has been interfered with but little, and har-

vesting is progressing finely; the timely showers and intense insolation during the month, with hot weather during the last decade, have added immensely to the corn prospect, which has not been as good as now in Iowa for several years.

GUSTAVUS HINRICHS.

CENTRAL STATION, I. W. S., August 1, 1884.

Professor J. T. Lovewell, director of the Kansas Weather Service, furnishes the following meteorological summary of observations made at Washburn College, Topeka:

Temperature of the air.	June 20th to 30th.	July 1st to 10th.	July 10th to 20th.	Mean.
Minimum and maximum averages.				
Minimum.....	68.	62.	66.
Maximum.....	95.	85.	97.
Minimum and maximum.....	82.	73.5	83.
Range.....	28.	23.	31.
Tri-daily observations.				
7 a. m.....	73.4	71.3	71.7	71.8
2 p. m.....	86.5	87.0	84.8	86.1
9 p. m.....	73.2	75.4	75.4	74.7
Mean.....	77.4	77.4	78.4	77.1
Relative humidity.				
7 a. m.....	.86	.86	.88	.86
2 p. m.....	.62	.55	.70	.65
9 p. m.....	.86	.77	.85	.82
Mean.....	.82	.71	.81	.78
Pressure as observed.				
7 a. m.....	29.934	28.965	29.023	29.004
2 p. m.....	28.990	28.948	28.991	28.976
9 p. m.....	28.993	28.949	29.020	28.987
Mean.....	28.990	28.954	29.011	28.989
Miles per hour of wind.				
7 a. m.....		9.8		
2 p. m.....		13.6		
9 p. m.....		7.5		
Total miles.....	1639	2413	1994	6007
Cloudiness, by tenths.				
7 a. m.....	4.4	4.7	4.6	4.6
2 p. m.....	4.7	2.5	4.5	3.9
9 p. m.....	2.6	3.0	4.3	3.3
Rain				
Inches.....	2.29	1.78	2.73	6.80

REPORT OF LOUISIANA STATE WEATHER SERVICE, UNDER DIRECTION OF MR. ROBERT S. DAY.

The weather, except for the high temperature, was without any special feature. The hot wave was present all over the state, reaching extreme figures in the northwestern parishes. At Minden nineteen days out of the month the mercury was over 100°; at Shreveport the thermometer registered over 100° on fourteen days. This has been the hottest July for twelve years. The low lands have had cooler days but warmer nights, the daily range appearing greatest on the uplands.

On the 10th a heavy storm, with vivid electric phenomena, occurred at Donaldsonville.

A heavy wind storm from the west, velocity thirty-seven miles per hour, occurred at New Orleans on the 26th.

Thunder storms occurred at New Orleans on the 6th, 7th, 10th, 15th, and 26th.

Crops are reported excellent on the low lands, but they need rain on the hills and prairies.

State summary.

Mean temperature, 84° 6, against 78° 5 for June; highest temperature, 106° at Minden, on the 8th; lowest temperature, 59° at Opelousas, on the 28th; greatest daily range of temperature, 38° at Alexandria, on the 1st; least daily range of temperature, 8° at Natchitoches, on the 18th.

Average rainfall, 2.40 inches; greatest daily rainfall, 2.04 inches at Opelousas, on the 24th; largest monthly rainfall, 4.88 inches at Lafayette.

Average number of rainy days, 5.6.

The Mississippi river at New Orleans fell three feet ten inches during the month; and the Red river at Shreveport fell eleven feet and two inches.

The following extract is from the "Michigan Crop Report" for July, 1884, prepared under the direction of the State Secretary:

The weather during harvest time was exceptionally fine. The rainfall at Lansing during July amounted to 3.24 inches, as compared with 10.12 inches for July, 1883. The weather during the last week of the month was unusually cool for the time of year. Light frosts were observed on the mornings of the 8th and 9th.

The Chief Signal Officer has received a valuable report on the principal meteorological conditions in Michigan during the year 1882, by the Michigan state board of health, Dr. Henry B. Baker, secretary.

REPORT OF THE MISSOURI WEATHER SERVICE, JULY, 1884.

The mean temperature during the past month has been 77° 6, which is 1° 6 below the normal for July at Saint Louis. The daily means were with very little range during the whole month.

The mean daily range was 15° 4, with small ranges on the 5th, 15th, and 17th.

The maximum temperatures were generally observed on the 8th of the month, with some few exceptions for the 23d.

The minimum temperature at the central station was observed on the 14th. The range of the minimum temperatures was remarkably small, the mean minimum being 69° 9.

The rainfall at the central station was 2.94 inches, which is 1.22 inches below the normal amount for July. This amount, however, has generally been exceeded in the other parts of the state, Hannibal, Keokuk, and Mascoutah, only, registering as low or below. The largest amount has been in the central part of the state, with larger amounts in the southeastern, central-southern, and northwestern portions. A remarkably heavy rainfall was observed at Miami on the 13th, 5.25 inches falling in twelve hours.

In some parts of the state there has been a great number of thunderstorms, generally in the vicinity of the Missouri and Mississippi rivers.

Hail fell at Ironton on the 5th, at Chamois on the 5th and 15th, at Mexico on the 12th, and at Miami, with damaging results to the corn crop, on the 27th.

Glasgow and Lexington report that the large amounts of rain did damage to the wheat in the shock and the hay. The corn and tobacco crops are generally reported as doing finely, the corn in some localities being extra fine and beyond the danger of drouth.

A. RAMEL,
Assistant in charge.

Washington University, August 8, 1884.

NEBRASKA WEATHER BULLETIN, JULY, 1884.

The general character of the month was cool, with rainfall considerably above the normal.

Rainfall.—The average by sections was as follows: southeast, 7.40 inches; northeast, 6.07 inches; southwest, 7.85 inches; northwest, 4.27 inches; average for the entire state, 6.55 inches.

Relative humidity.—Mean relative humidity at Omaha, 65.0 per cent; North Platte, 70.9 per cent; De Soto, 82.7 per cent.

Temperature.—The mean temperature of the air was 74.6. The average of all noon observations was 83.8. The following are some of the maximum and minimum temperatures:

Stations.	Max. temperature.	Min. temperature.
Omaha.....	97.3	57.5
North Platte.....	97.0	55.0
De Soto.....	99.0	55.0
Crete.....	95.6	52.4

Wind.—Number of miles traveled: Omaha, 5,385; North Platte, 7,187; Crete, 7,498. Highest velocity: Omaha, 42 miles, from north; North Platte, 47 miles, from west; Crete, 50 miles, from north.

Hail.—Hail was reported at Superior on the 30th; Marquette on the 20th; Dawson on the 29th; Stromsburg on the 13th and 27th, and Fremont on the 18th.

The following extract is from "The New Jersey Weather Review" for July, 1884, prepared under the direction of Mr. W. Earle Cass, of Newark:

The temperature ranged from 97°, at Salem, to 54°, at Newark and Lambertville; the mean temperature of the state, as represented by twelve stations, being 70° 97, which is several degrees below the average of past years.

The rainfall varied from 2.20 inches at Salem to 6.48 inches at Paterson; the average for eighteen stations being 4.96 inches. The rainy days ranged from seven to seventeen in different parts of the state.

Warm days (between 65° and 84°), about twenty-three in number. Hot days (maximum temperature between 85° and 95°), about seven. No very hot days were reported (maximum temperature over 95°).

Prevailing wind, southwest to northwest.

REPORT OF THE OHIO METEOROLOGICAL BUREAU, JULY, 1884

The atmospheric pressure for the month of July was somewhat lower than during the corresponding month of last year. The difference is approximately one-tenth of an inch, alike for the mean, the maximum, and the minimum. The lowest barometer was recorded on the last day of the month, and no extraordinary fluctuations are reported.

The temperature was, on the whole, somewhat lower than for July of last year. The mean temperature was 71° 5 against 72° 1 for last year. The highest temperature observed was 96° 0, at Waverly, the maximum for the same month of last year being 97° 8. The minimum temperature, which was 41°, recorded at Lebanon, was more than 2° lower than that of July, 1883.

The noticeable feature of the weather for the month was the absence of rain during the greater part of it. During the last third of the month of June and nearly all of July, very little rain fell, the severe drought extending over nearly all of the state. Heavy rains occurred very generally during the last week of July, and the total precipitation for the month, as shown in the summary, was brought nearly up to that of last year, and somewhat above the normal amount for July.

The prevailing direction of the wind was from the northwest.

State summary.

Mean barometer, 29.900 inches.
 Highest barometer, 30.279 inches, on the 3d at Jefferson.
 Lowest barometer, 29.569 inches, on the 31st at Jefferson.
 Range of barometer, .710 inch.
 Mean relative humidity, 70.1 per cent.
 Mean temperature, 71° 5.
 Highest temperature, 96° 0, on the 24th at Waverly.
 Lowest temperature, 41° 0, on the 21st at Lebanon.
 Range of temperature, 55° 0.
 Mean daily range of temperature, 21° 7.
 Greatest daily range of temperature, 49° 5, on the 22d at O. S. University.
 Least daily range of temperature, 3° 0, on the 19th at Jefferson.
 Number of clear days, 11.7.
 Number of fair days, 14.2.
 Number of cloudy days, 5.1.
 Number of days on which rain fell, 10.5.
 Mean rainfall, 3.83 inches.
 Average daily rainfall, .123 inch.
 Greatest rainfall, 6.60 inches, at Junction.
 Least rainfall, 1.70 inches, at College Hill.

REPORT OF THE TENNESSEE WEATHER SERVICE, JULY, 1884, UNDER DIRECTION
 OF HON. A. J. M'WHIRTER.

The weather during July presented many unusual features, the chief of which were the extraordinary electrical disturbances and the amount of rainfall. The storms which prevailed were, many of them, general in their character, and some of them, notably those of the 5th, 9th and 30th, were quite destructive to the growing crops. The mean temperature for the

month was 76°, which is 4° above that for the preceding month, and 2° above that for July, 1883. The highest temperature was 99°, which is 1° above July, 1883; the lowest was 46° or 10° below July of last year; the mean of the maximum and minimum temperatures differed very slightly from those of 1883. The high temperatures were general about the 5th and 24th, and the low temperatures about the 7th. The average rainfall for the month was 3.55 inches, which is 0.25 inch greater than that for the preceding month, and 1.67 inches greater than that for July, 1883, which was itself an unusual amount for July. The days of greatest rainfall were the 4th, 9th, 15th, 18th, and from the 25th to 31st inclusive. The greatest daily rainfall occurred on the 31st, when an average of 1.03 inches fell throughout the state. Many of these rains were general, and many of them were accompanied by severe electric storms.

State summary.

Mean temperature, 76°; highest temperature, 99°, on the 4th, at Hohenwald, and on the 9th at Woodstock; lowest temperature, 46°, on the 21st, at Andersonville; range of temperature, 53°; greatest daily range of temperature, 36° on the 21st, at Andersonville, and on the 23d at Hohenwald; least daily range of temperature, 0° on the 30th, at Franklin, and 1° on the 26th at Kingston Springs, and on the 30th at Hardison's Mills. Mean depth of rainfall, 5.55 inches; mean daily rainfall, .179 inch; greatest rainfall, 10.62 at Manchester; least rainfall, 1.98 at Woodstock. Average number of clear days, 9; fair days, 13; cloudy days, 9; average number of days on which rain fell, 11.6. Prevailing winds, west and southwest.

ERRATUM.

In the June REVIEW on page 155, under the heading "Mirage," the phenomenon reported by Mr. Crawford was not seen at Allegheny City, but at Leetsdale, and the hill referred to was situated between the natural gas well and Leetsdale.